

# Generative AI: Learning By Example

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Presentation by: Jason and Azahar

Time to Grow (Leeds), 15<sup>th</sup> November 2023



# The Speakers

## **Azahar Machwe (Ph.D.)**

CTO Emerging tech. & Innovation



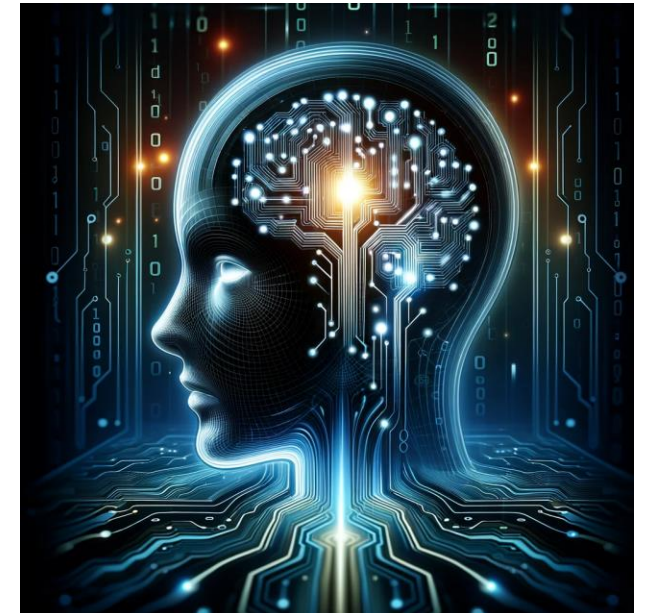
## **Jason Corless**

CTO Enterprise Architecture



## **ChatGPT**

OpenAI Representative

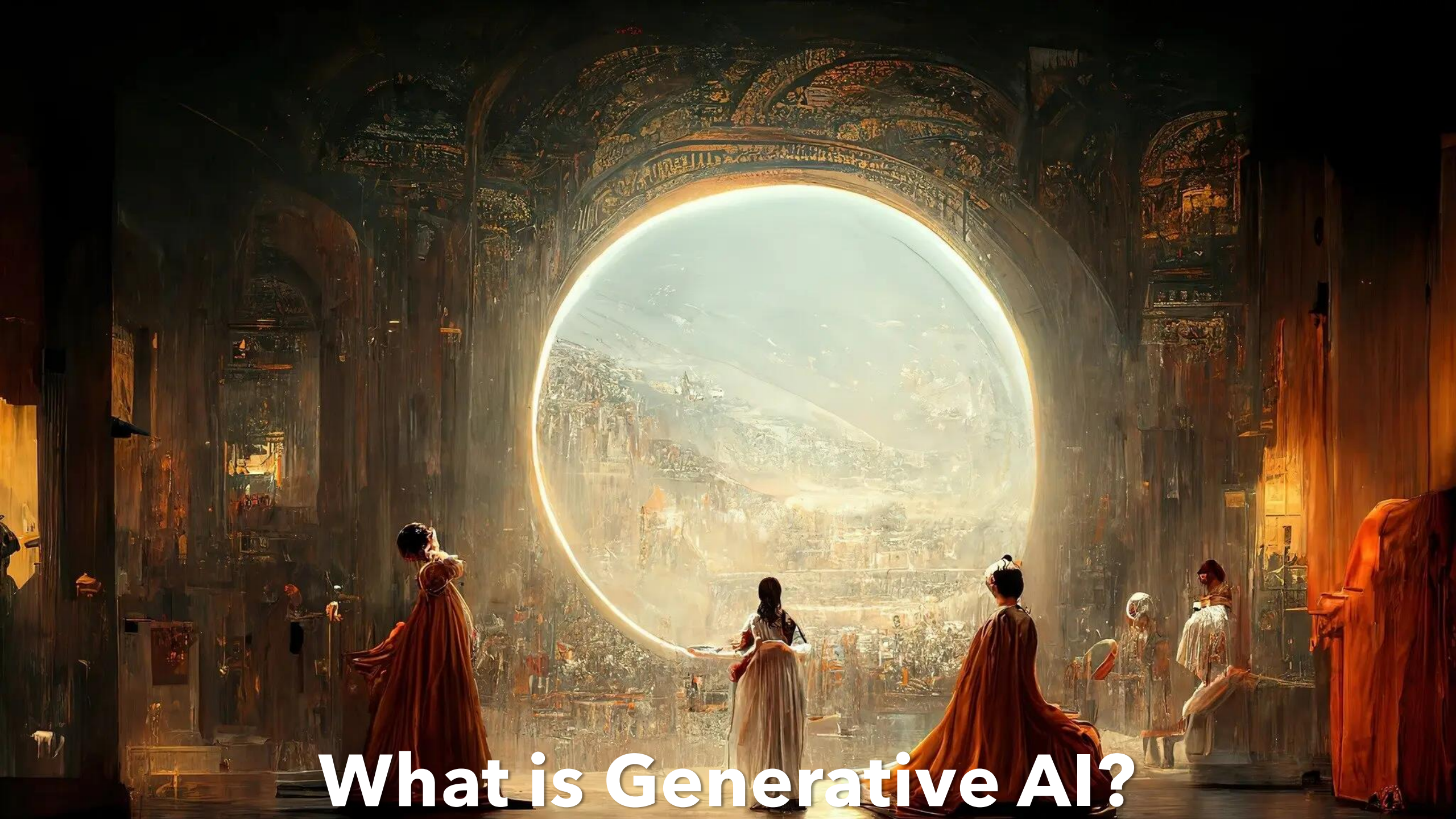




# Outline

- 1) Overview of Generative AI
- 2) Generative AI in Action: Using tools for useful work
- 3) Interactive Generative AI: Exploring a simulation





**What is Generative AI?**

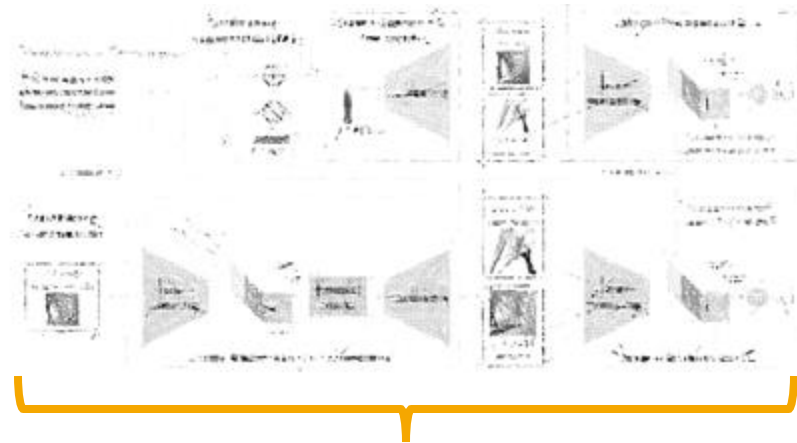


# What is Generative AI?

Using AI models to **generate** high quality documents, images, and videos based on user supplied prompts.

## User supplied prompt

"A cute puppy splashing through water"



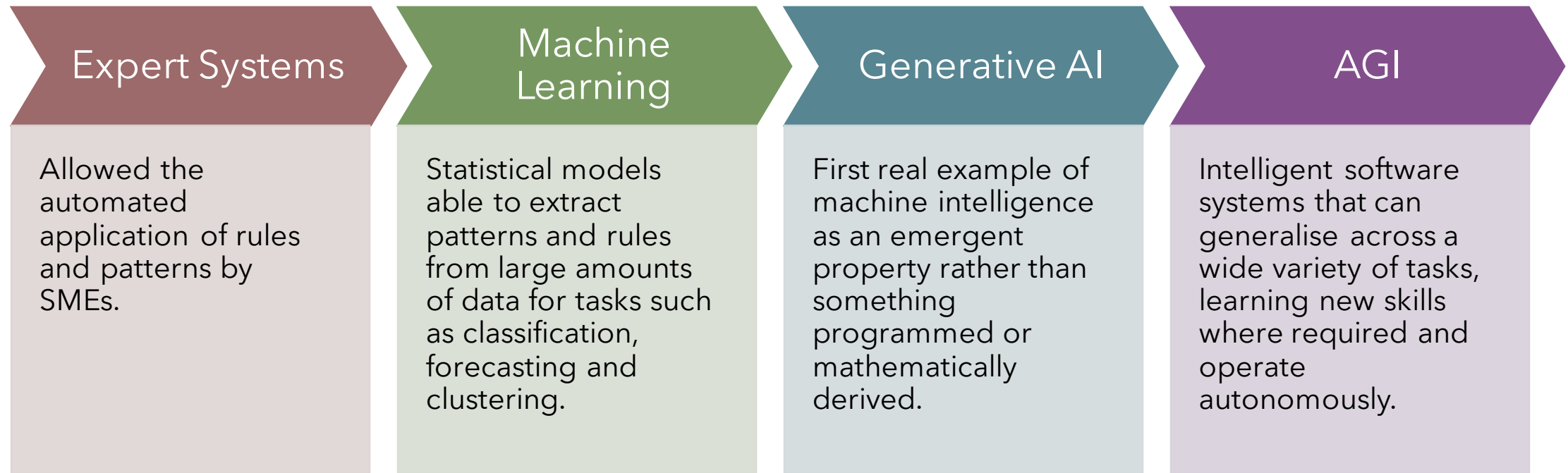
AI Model





# Generative AI and AGI in context

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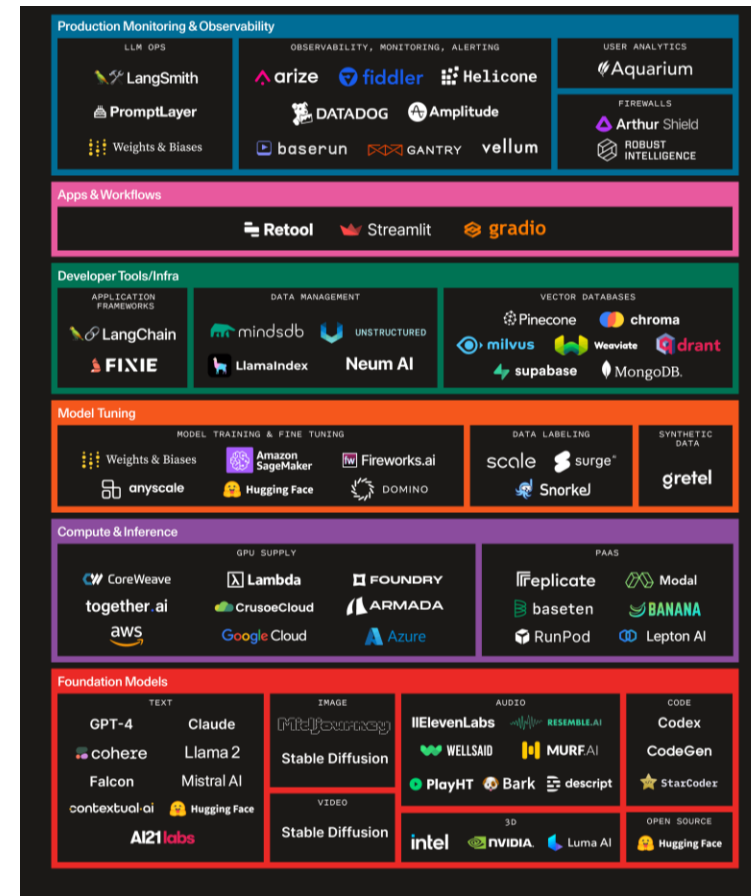


# Focus on Value

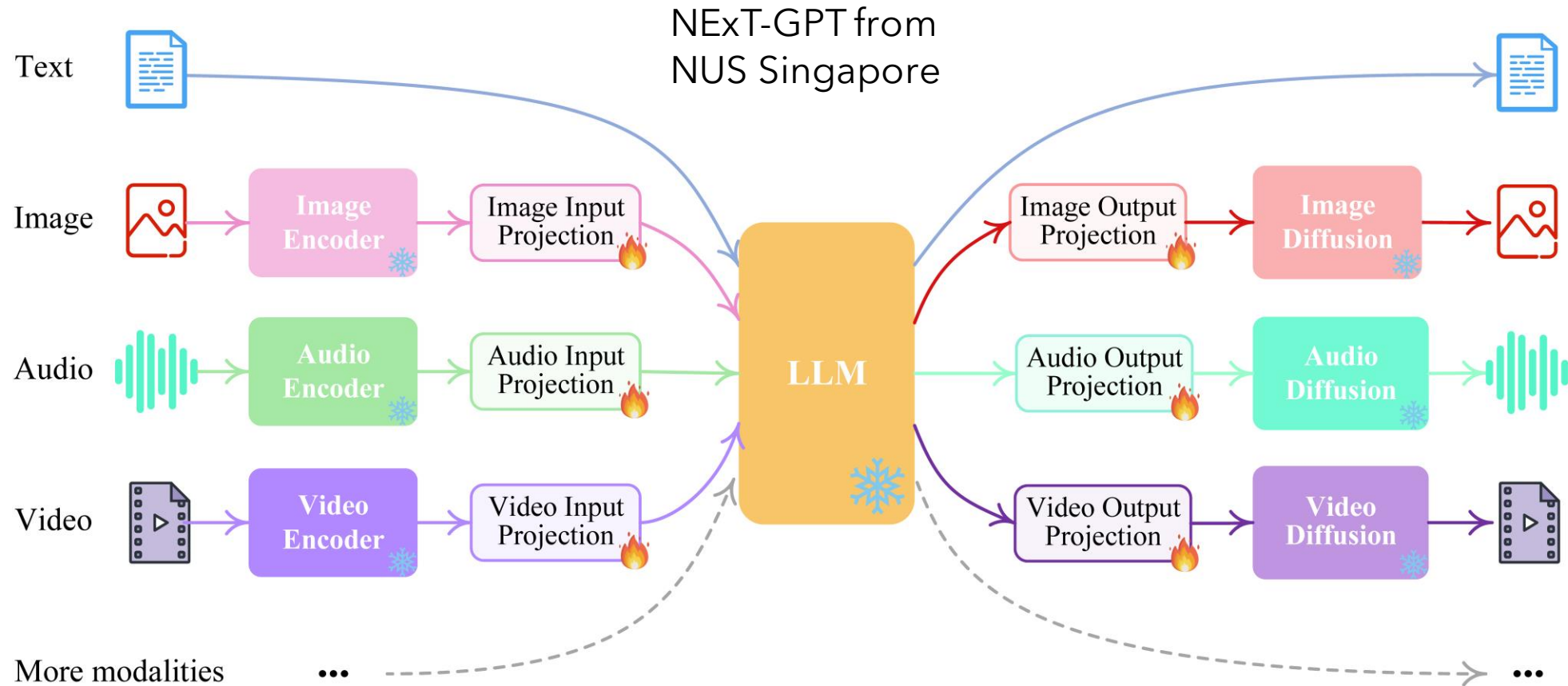
## Generative AI Market Map



## Generative AI Infrastructure Stack



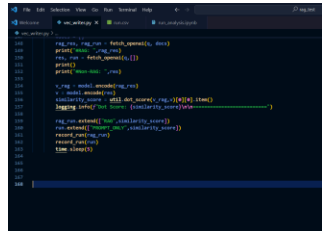
# What's Next?



Shared Context: Models that can accept text, images, audio, etc. as **inputs** as well as **generate** different modalities.



# Generative AI for Super Techies



**VS Code Editor**

Model downloaded  
from trusted  
repositories  
(e.g., Hugging Face)



[Hugging Face](https://huggingface.co)



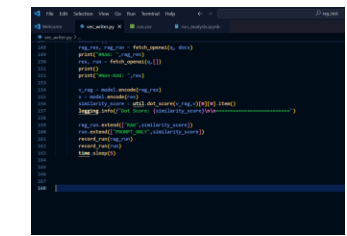
## Hardware Requirements

Development PC with *at least* 16gb of RAM, GPU, and internet access to download models

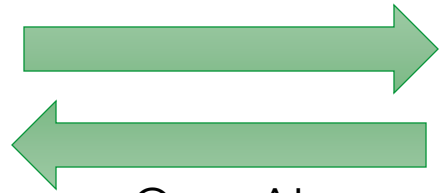
## Software Requirements

- Visual Studio Code Editor
- Python 3.11.x
- Python ML Libraries:  
transformers, keras,  
and tensorflow

# Generative AI for Casual Techies



**VS Code Editor**



OpenAI  
API client

Open  
AI APIs

Open AI  
Models

GPT-3.5  
GPT-4  
others



## Hardware Requirements

A PC with *at least* 8gb of RAM and internet access to connect with APIs

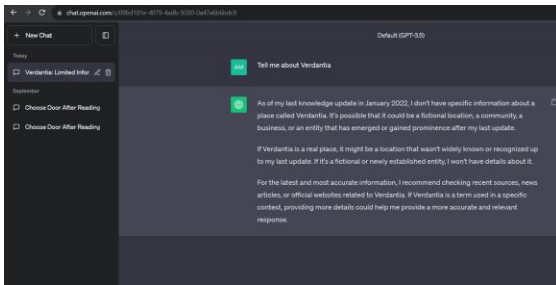
## Software Requirements

- Visual Studio Code Editor
- Python 3.11.x
- Python Libraries:  
OpenAI API client



# Demo

# Generative AI for All



**GPT Website/App**



Open AI Models

GPT-3.5 (Free)  
GPT-4 (£)



## Hardware Requirements

Any smart device or laptop with internet access

## Software Requirements

Navigate to the address below and setup your account

[Signup](#)



# Introducing Verdantia

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Verdantia is a lush, vibrant world that has made significant strides in sustainable living, though it still faces challenges balancing its inhabitants needs with the preservation of its unique ecosystems



# How Imaginative is the Simulation/Hallucination?

**A**

Beings of Verdantia make contact with Earth... What happens next?

**B**

Might the Verdantians have knowledge of their place in the universe and how does that interplay with religion?

**C**

Protecting the environment is important on Verdantia, how might the laws of the planet or regions support that?

# Some Tough Choices

**A**

Extremely valuable resources are discovered deep beneath the ground of Frostholt. What happens next?

**Frostholt:** Predominantly icy with sparse vegetation, populated by hearty species adapted to extreme cold. Small communities extract valuable minerals, impacting the local environment.

**B**

Is it advisable for Verdantians to ignore global warming and "level up" Frostholt?

**C**

What would be the consequences if Zyphera underwent a massive industrial expansion to boost its economy?

**Zyphera:** Known for its towering bioluminescent forests and rich biodiversity. Heavily populated in the cities, with sprawling urban areas.

# How deep is the Simulation/Hallucination?

**A**

What do Verdantians look like?

**B**

Why is the Festival of Lights important for Frostholm which doesn't have the natural conditions to sustain the bioluminescent flora?

**C**

Given that Verdantia has a strong focus on sustainability, what is the status of global warming?





Thank you!

# Useful links

Link	Description
<a href="https://huggingface.co/">https://huggingface.co/</a>	One stop site for LLMs
<a href="https://pypi.org/project/transformers/">https://pypi.org/project/transformers/</a>	Getting started with coding transformers
<a href="https://code.visualstudio.com/">https://code.visualstudio.com/</a>	Visual Studio Coding Environment
<a href="https://github.com/corlejas/planet-sim">https://github.com/corlejas/planet-sim</a>	Repository of the content shown today

# Some Useful Terms

Term	Meaning
Artificial Neuron	A simple software or hardware component that mimics the way neurons in the brain work.
Neural Networks	An inter-connected network of artificial neurons where output from one neuron can be plugged into the input of multiple other neurons.
Multi-modal	A Generative AI model that can work with multiple inputs (e.g., text + image)
Conversational AI	AI models that are trained to have a dialog which enables conversational style of interaction between humans and IT systems
Large Language Models (LLM)	AI models used in current Generative AI applications. They are 100-200x larger than traditional machine learning models. These models have learnt the rules of language generation.
Foundation Model	A large language model that is not trained for specific tasks but instead forms the starting point for task specific model development.
Fine-tune	Training a foundation model with task specific data to create a task-specific model. For example, ChatGPT is a model created by fine-tuning GPT-3.5/4 model that has the ability to chat with its users.
Reinforcement Learning	A type of machine learning technique where the model learns via feedback on its output rather than through examples. Used to create fine-tuned models like ChatGPT.